allegedly were not submitted along with that paper. However, Applicants respectfully submit that copies of the cited art were filed in the Patent and Trademark Office with the Information Disclosure Statement on June 26, 2000, as evidenced by the attached copy of the postcard bearing the official stamp of receipt of the Patent and Trademark Office. Nonetheless, for the Examiner's convenience, further copies of the cited art are being submitted herewith along with an Information Disclosure Statement And Re-submission Of Previously-Cited Art, for consideration by the Examiner.

In the Office Action, Claims 1-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,008,502 (*Deguchi et al.*) in view of U.S. Patent No. 5,805,129 (*Inaba et al.*).

Independent Claim 1 is directed to a manufacturing method of an electron-emitting device. The method comprises the steps of disposing an electrically conductive member having a gap on a substrate, and applying a voltage to the electrically conductive member while irradiating at least the gap with an electron beam from an electron emitting means disposed apart from the electrically conductive member in an atmosphere comprising a carbon compound.

With regard to the *Deguchi et al.* and *Inaba et al.* references, the Office Action alleges that *Deguchi et al.* teaches the foregoing features of Claim 1 at col. 11, lines 8-12, but makes no mention whatsoever as to how *Inaba et al.*

has been applied against Claim 1 (and against Claims 2-10). Nonetheless, Applicants have carefully reviewed both *Deguchi et al.* and *Inaba et al.*, and respectfully submit that Claim 1 is clearly patentable over those references for the following reasons.

The portion of *Deguchi et al.* relied on in the Office Action refers merely to a method for producing an electron emitting device formed using a diamond layer. The method includes a step of irradiating a predetermined region of the diamond layer with ultraviolet rays of a wavelength of 200 nm or less, and apparently makes it possible to selectively remove elements bonded to the diamond surface and form new bonds. As a result, a state of electron affinity on the diamond surface can be controlled to be either positive (insulating) or negative (conductive) (see, e.g., col. 11, lines 8-17). *Deguchi et al.* also refers to a step of applying a voltage across two electrodes 21a and 21b of an electron emitting device (see, e.g., col. 6, lines 3-8). However, that voltage is applied for driving the device after it has been already manufactured.

Applicants respectfully submit that, while *Deguchi et al.* may refer to the foregoing features, nothing has been found, or pointed out, in *Deguchi et al.* that would teach or suggest a manufacturing method of an electron-emitting device, comprising a step of applying a voltage to an electrically conductive member of the device *while*

irradiating at least a gap of the conductive member with an electron beam from an electron emitting means disposed apart from the electrically conductive member *in an atmosphere comprising a carbon compound*, as recited in Claim 1.

Inaba et al., which is assigned in common with the present application, relates to liquid crystal display devices, and is cited in the Office Action (with respect to dependent Claim 11 only) as teaching a method of forming an image-forming apparatus having an electron source and an image forming member. However, while *Inabe et al.* may refer to liquid crystal displays, that reference does not relate at all to electron-emitting devices, let alone to a manufacturing method of an electron-emitting device. Indeed, Applicants respectfully submit that nothing in *Inaba et al.* would teach or suggest a manufacturing method of an electron-emitting device comprising steps as recited in Claim 1 of the present application.

Moreover, since *Inaba et al.* does not relate at all to electron-emitting devices or methods for manufacturing electron-emitting devices, there would have been no reason whatsoever why one skilled in the relevant art who was faced with the same problem confronted by Applicants at the time of Applicants' invention would have even consulted that reference, let alone been motivated to combine it with a reference relating to electron-emitting devices, such as *Deguchi et al.* Indeed, since Claim 1 recites a manufacturing

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method of an electron-emitting device, whereas *Inaba et al.* relates to liquid crystal displays -- a completely non-analogous art -- the Examiner's reliance on that reference is improper, since it is well established that "[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ 1443, 1445 (Fed. Cir. 1992). *See also* MPEP 2141.01(a). It is now seen how, in the context of Claims 1-11, liquid crystal displays could be said to meet either of those criteria.

For all of the foregoing reasons, Applicants respectfully submit that the Examiner has failed to establish a prima facie case of obviousness against Claim 1, and that Claim 1 is clearly patentable over *Deguchi et al.* and *Inabe at al.*, whether considered separately or in combination. If, after considering these remarks, the Examiner still maintains the same rejection of the Claim 1 in any next Office Action, she is respectfully requested to explain in detail how *Inabe et al.* is applied in combination with *Deguchi et al.* against Claim 1, in accordance with 37 C.F.R. § 1.104(c)(2).

Independent Claim 2 recites features that are similar in many respects to those of Claim 1 emphasized above, and also is believed to be clearly patentable over

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presented above.

Independent Claim 3 recites, in part:

"*irradiating at least said gap with an electron beam* from electron emitting means disposed apart from said electrically conductive member *in an atmosphere comprising a carbon compound within a period where a voltage is applied to said electrically conductive member.*" (Emphasis supplied).

For the reasons argued above, Applicants respectfully submit that nothing in either *Deguchi et al.* or *Inaba et al.* would teach or suggest those features of Claim 3, and that Claim 3 is therefore patentable over those references, whether considered separately or in combination.

Independent Claim 4 recites features that are similar in many respects to those of Claim 3, and also is believed to be clearly patentable over *Deguchi et al.* and *Inaba et al.* for the same reasons.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed to be patentable over the prior art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed to be patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention,

however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

Attorney for Applicants

Registration No. 29,295

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A manufacturing method of an electron-emitting device comprising the steps of:

disposing an electrically conductive member having a [second] gap on a substrate; and

applying a voltage to said electrically conductive member while irradiating at least said [second] gap with an electron beam from electron emitting means disposed apart from said electrically conductive member in an atmosphere comprising a carbon compound.

2. (Amended) A manufacturing method of an electron-emitting device comprising the steps of:

disposing first and second electrically conductive members on a substrate with a [second] gap interposed; and

applying a voltage to said first and second electrically conductive members while irradiating at least said [second] gap with an electron beam from electron emitting means disposed apart from said electrically conductive members in an

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atmosphere comprising a carbon compound.

3. (Amended) A manufacturing method of an electron-emitting device comprising the steps of:

disposing [en] <u>an</u> electrically conductive member having a [second] gap on a substrate; and

irradiating at least said [second] gap with an electron beam from electron emitting means disposed apart from said electrically conductive member in an atmosphere comprising a carbon compound within a period where a voltage is applied to said electrically conductive member.

4. (Amended) A manufacturing method of an electron-emitting device comprising the steps of:

disposing first and second electrically conductive members on a substrate with a [second] gap interposed; and

irradiating at least said [second] gap with an electron beam from electron emitting means disposed apart from said electrically conductive members in an atmosphere comprising a carbon compound within a period where a voltage is applied to said first and second electrically conductive members.

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5. (Amended) The manufacturing method of an electron-emitting device according to claim 1 or 3, wherein said electrically conductive member having said [second] gap is an electrically conductive film which connects a pair of electrodes to each other and has said [second] gap in a portion of the electrically conductive film.

6. (Amended) The manufacturing method of an electron-emitting device according to claim 2 or 4, wherein said electrically conductive members are a pair of electrodes which are disposed with said [second] gap interposed.

7. (Amended) The manufacturing method of an electron-emitting device according to claim 2 or 4, wherein said electrically conductive members are a first electrically conductive film and a second electrically conductive film which are connected to [a] first and second electrodes [apart] disposed <u>apart</u> respectively and are disposed with said [second] gap interposed.

8. (Amended) The manufacturing method of an electron-emitting device according to any one of claims 1 through 4, wherein said applied voltage is a pulse-like voltage.

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